IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

RICHARD H. DEE

Serial No.: 10/727,804

Filed: December 4, 2003

For: Multi Head Data Storage Device with Plural Data Channels Per Head

Attorney Docket No.: (2004-072-TAP) STK 03072 PUS

Group Art Unit: 2627

Examiner: Craig A. Renner

APPEAL BRIEF UNDER 37 C.F.R. § 41.37 AND PETITION FOR 2-MONTH EXTENSION OF TIME

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Sir:

Applicant filed a Notice of Appeal on August 11, 2010 and hereby petitions for a two month extension of time to file an Appeal Brief, thereby extending the time period within which to respond to December 13, 2010.

This Appeal Brief is filed in support of the Notice of Appeal appealing the final rejection of claims 1 – 3, 6, 7, 10 – 12, 15, 16, 19, and 21 - 24 in the Office Action mailed on May 11, 2010 for the above-identified patent application.

I. REAL PARTY IN INTEREST

The real party in interest is the patent owner, Oracle Corporation, a corporation organized and existing under the laws of the state of Delaware, and having a place of business at Redwood City, California.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals, interferences or judicial proceedings known to the Appellant, the Appellant's legal representative, or the Assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1 – 4, 6, 7, 10 – 13, 15, 16, 19, and 21 - 24 are pending in this application. Claims 4 and 13 have been withdrawn from consideration. Claims 1 – 3, 6, 7, 10 – 12, 15, 16, 19, and 21 - 24 have been rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendment has been filed after the final rejection mailed on August 11, 2010.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's independent claims include Claims 1, 10, and 21, none of which include means plus function limitations.

Claim 1 is directed to a data storage system comprising a plurality of read/write heads 204a with each read/write head having a plurality of read/write elements 212a, as shown in Fig. 2 and described in the specification on page 9, l. 14 – page 10, l. 26, for example. The storage system includes a plurality of data channels with a subset of data channels coupled to a read/write head, such as illustrated in Figs. 4A-4C and described on p. 16, l. 18 – p. 20, l. 12, for example. The system includes a storage medium having a plurality of storage bands wherein each read/write head is uniquely associated with a single storage band such that the read/write heads are alignable with a single mode of operation, i.e. only fine positioning is used as described on p. 6, ll. 6-10 and p. 10, ll. 11-21, for example.

Claim 10 is directed to a read/write head assembly comprising a plurality of read/write heads 302a-302e; 204a – 204n having a plurality of read/write elements 212a; 412a; 414a each operable to read and write data from or to corresponding tracks of a corresponding storage band 208a – 208n; 304a-304d arranged on a storage medium as described on p. 12, l. 17 – p. 16, l. 17

and a plurality of data channels corresponding to the plurality of read/write elements as described on p. 16, l. 18 – p. 20, l. 12, for example.

Claim 21 is directed to a data storage system comprising a plurality of read/write heads 306-313 each associated with a corresponding one of a plurality of storage bands 304a-304d extending across a magnetic storage medium as described on p. 12, l. 17 – p. 16, l. 17. Each of the plurality of read/write heads is displaced along a direction of travel of the magnetic storage medium relative to an adjacent read/write head as shown in Figs. 3A-3D, for example. Each of the read/write heads is coupled to at least one of a plurality of data channels as described on p. 13, ll. 9-16, for example.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Rejection of Claims 1, 2, 7, 10 – 12, 15 and 16 under 35 U.S.C. § 102(b) as being anticipated by Gerding (US 3,426,338).

B. Rejection of Claims 1, 7, 10, 16 and 19 under 35 U.S.C. § 102(b) as being anticipated by McKay et al. (US 5,761,005).

C. Rejection of Claims 1, 2, 6, 7, 10, 11, 16, 21 and 22 under 35 U.S.C. § 102(b) as being anticipated by Muller et al. (US 5,831,798).

D. Rejection of Claims 1 - 3, 6, 7, 10 – 12, 15, 16, 19 and 21 – 23 under 35 U.S.C. § 102(e) as being anticipated by Iwama (US 6,778,359).

E. Rejection of Claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Muller et al. (US 5,831,798).

VII. ARGUMENT

A. Rejection of Claims 1, 2, 7, 10 – 12, 15 and 16 under 35 U.S.C. § 102(b) as being anticipated by Gerding (US 3,426,338).

Claims 1, 2, 7, 10-12, 15, and 16 were rejected as being anticipated by Gerding. The Examiner improperly conflates various claim terms, such as data channels, storage bands and

tracks, and read/write heads and elements in an attempt to show anticipation. Because Gerding fails to disclose a number of the features as disclosed and claimed by Appellant, the rejection is improper and should be reversed.

The Examiner relies on Fig.1 items A-D as being read/write heads. This is directly contrary to the labels of Figure 1 that identify items A-D as "channels" and are described in the specification as "recording channels" (Col. 5, ll. 10-12). Each recording channel includes a read-head (4a-4d) and a write-head (6a-6d). As such, it is unclear what the Examiner asserts is a "read/write head" and what is asserted as a "read/write element". To the extent that "channel A" is proposed as a "read/write head" it does not include a plurality of read/write elements. Rather, it includes one read element 4a and one write element 6a. As such, Gerding fails to anticipate "a plurality of read/write heads, each read/write head . . . having a plurality of read/write elements" as claimed by Appellant.

The Examiner improperly relies on a theory of inherency for anticipation of the next limitation of Claims 1, 7, and 10, i.e. that Gerding inherently contains a plurality of data channels configured as claimed by Appellant. This reliance is misplaced. Inherency requires that the feature must necessarily be present in the disclosed device. To the extent that data channels are inherent in the device disclosed by Gerding, there is no disclosure of any relationship between data channels and read/write heads or read/write elements as disclosed and claimed by Appellant. The Examiner's assertion that it is inherent to have a subset of a plurality of data channels coupled to a read/write head is mere speculation. The Examiner has not provided any evidence how this feature would be inherent as other possibilities clearly exist. For example, to the extent that data channels are inherently disclosed by Gerding, each data channel may be coupled to a single read/write head, which fails to anticipate the relationship claimed by Appellant. As such, reliance on inherency is improper and Gerding fails to disclose this feature of Claims 1 and 10.

The Examiner improperly conflates storage bands and tracks in interpreting Gerding, which does not differentiate between storage bands and tracks. As explained by Appellant with reference to Figure 1 on p. 2, l. 29 – p. 3, l. 2, "the recording surface can be subdivided into a plurality of bands . . . each band containing a plurality of data tracks." Because Gerding does not

disclose a plurality of read/write elements for each read/write head, Gerding is not capable of writing to multiple tracks within a storage band. Rather, Gerding discloses that each track has an associated read/write module comprising a single read-head and a single write-head. As such, Gerding does not disclose that each read/write element is associated with a corresponding one of a plurality of data channels and operable to read and write data from or to corresponding tracks of a corresponding storage band as disclosed and claimed by Appellant.

With respect to Claim 12, the Examiner must interpret the claim in light of the specification and consistent with one of ordinary skill in the art giving the claim terms their plain meaning. The Examiner's proposed interpretation is contrary to all three principles. Gerding does not disclose that the magnetic tape can travel in a first and second direction (see Fig. 1) and does not disclose read/write heads that include a first configured for read after write operation when the storage medium travels in a first direction and a second read/write head configured for read after write operation when the storage medium travels in a second direction.

For the reasons above, the rejection under 35 USC §102(b) based on Gerding is improper and should be reversed.

B. Rejection of Claims 1, 7, 10, 16 and 19 under 35 U.S.C. § 102(b) as being anticipated by McKay et al. (US 5,761,005).

Claims 1, 7, 10, 16, and 19 were rejected as being anticipated by McKay et al. Similar to Gerding, McKay et al. fails to disclose a number of features of Appellant's claims. The Examiner again ignores the plain meaning of various claim terms in attempting to interpret a disk drive mechanism to read on the data storage system disclosed and claimed by Appellant, and again improperly relies on inherency for anticipating various claim terms.

The Examiner relies on element 60, described as a "slider" (Col. 8, l. 19) as anticipating Appellant's claimed read/write heads; element 62, described as a "transducer" as anticipating Appellant's claimed read/write elements; and element 66 described as "conductor circuitry" as Appellant's claimed data channels. McKay et al. is directed to a disk drive assembly and does not disclose read/write heads having a plurality of read/write elements, storage bands each

having a plurality of tracks, or data channels associated with each read/write element as disclosed and claimed by Appellant.

The Examiner generally relies on Fig. 4 of McKay as showing each of Appellant's claimed features. However, even if transducers 62 are interpreted as read/write elements and sliders 60 are interpreted as read/write heads, Figure 4 does not disclose any tracks, bands, or data channels, and does not disclose any relationship between the storage bands and sliders or data channels and transducers. Furthermore, as described in Col 6, ll. 14-23, for example, transducer-slider assembly 24 is moved from one track to another for read or write operations and is required to be properly positioned over the desired track and reach that track in a minimum amount of time. This is clearly contrary to the Examiner's interpretation that each read/write head is uniquely associated with a single storage band and alignable with a single mode of operation as disclosed and claimed by Appellant in Claim 1.

Similarly, with respect to Claim 10, McKay fails to disclose a read/write heads having read/write elements operable to read and write to corresponding tracks of a corresponding storage band with each read/write head being uniquely associated with a single storage band. Likewise, McKay fails to disclose a plurality of data channels corresponding to the plurality of read/write elements with a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads.

With respect to Claim 7, Figure 4 of McKay fails to disclose any data channels and fails to disclose any relationship between the data channels and read/write heads. Similarly, with respect to Claim 16, Figure 4 of McKay fails to disclose any data channels or storage bands and therefore fails to disclose each of a plurality of read/write heads coupled to a plurality of data channels associated with one of the storage bands. As previously described, McKay does not disclose a read/write head for each storage band. Rather, McKay discloses moving the slider to a desired track of the concentric data tracks (Col. 6, ll. 14-23) and does not disclose any storage bands each having a plurality of tracks as disclosed and claimed by Appellant. With respect to Claim 19, Figure 4 of McKay does not disclose any actuation unit. To the extent that an

actuation unit is disclosed, there is no disclosure of the type of positioning operation performed by the actuation unit.

For the reasons above, McKay et al. fails to disclose various features of Appellant's claims 1, 7, 10, 16, and 19. As such, the rejection under 35 USC §102(b) based on McKay et al. should be reversed.

C. Rejection of Claims 1, 2, 6, 7, 10, 11, 16, 21 and 22 under 35 U.S.C. § 102(b) as being anticipated by Muller et al. (US 5,831,798).

As with the Gerding and McKay references, Muller et al. fails to disclose a number of features as disclosed and claimed by Appellant in Claims 1, 2, 6, 7, 10, 11, 16, 21, and 22. As such, the rejection for anticipation is improper and should be reversed.

The Examiner points to structures disclosed in Muller et al. that have a similar function as those claimed by Appellant while refusing to acknowledge the difference between read/write heads and read/write elements, storage bands and tracks, and ignoring various claim limitations with respect to the relationships among the elements and the data channels as claimed. The Examiner relies on 86a and 86b as being a plurality of read/write heads contrary to the description in Muller et al. that item 29b is the magnetic read/write head and element 86a denotes one half of the head face and 86b is another half of the head face (Col. 7, ll. 22-33). This misinterpretation is necessary for the transmission gaps 89 to be interpreted as the claimed read/write elements. The Examiner must then again improperly rely on inherency to fill the remaining gaps in the disclosure relative to the function of the data channels and the claimed relationship of the data channels relative to the storage band, and tracks because Muller et al. does not disclose read/write elements, storage bands, tracks, or data channels as disclosed and claimed by Appellant.

With respect to claims 1 and 10, Muller et al. does not disclose a plurality of read/write heads with each having a plurality of read/write elements. To the extent that the Examiner's interpretation of the faces 86a, 86b are heads and transmission gaps 89 are elements, Muller et al., the disclosures is inconsistent with the claim limitation that each read/write head is uniquely

associated with a single storage band. This is clear from Figure 8b in that the tape travels horizontally in the Figure and the purported read/write heads 86a and 86b are parallel to one another. As such, if interpreted as proposed by the Examiner for purposes of anticipating the first limitation, the "heads" 86a and 86b do not satisfy the latter limitation as they are not uniquely associated with a single storage band. In addition, there is no disclosure in Muller et al. that the read/write heads are alignable with a single mode of operation as claimed. Rather, Muller et al. discloses the opposite in Col. 7, ll. 50-52, i.e. "For auto-reverse operation, the magnetic heads 25, 28 and 29 can be rotated through 180° about the axis 101 to cooperate with the track pattern of the information on the magnetic tape for the purpose of reading and/or writing in the reverse direction of the tape transport, see FIG. 7a."

To the extent that head faces 86a and 86b are interpreted as read/write heads, which is improper as noted above, Muller et al. does not disclose a plurality of data channels with a subset of the plurality of data channels coupled to a read/write head. The Examiner's reliance on inherency is improper as noted above. In particular, while data channels may be inherent, the claimed relationship between the data channels and the read/write heads is certainly not. Similarly, Muller et al. does not disclose a storage medium including a plurality of storage bands each having tracks where each read/write element is operable to read and write data from or to corresponding tracks of a corresponding storage band. The Examiner's interpretation improperly conflates the tracks and storage bands as well as the read/write heads and elements. The Examiner cannot apply a consistent reading of the head faces 86a, 86b, transmission gaps 89, storage bands and tracks to anticipate Appellant's independent claims 1, 10, and 21. As such, the rejection for anticipation is improper and should be reversed.

With respect to claim 21, Muller et al. does not disclose a plurality of read/write heads each displaced along a direction of travel of the magnetic storage medium and each associated with a corresponding one of a plurality of storage bands with each of the plurality of read/write heads coupled to at least one of a plurality of data channels. As previously described, Muller et al. discloses only a single read/write head 29b with transmission gaps 89. The Examiner's interpretation of a first half faces 86a and 86b as read/write heads is inconsistent with the disclosure of Muller et al. Likewise, the interpretation of transmission gaps 88 as read/write

elements is inconsistent with the disclosure of Muller et al that describes the transmission gaps as operable to read and write information. To that extent, the transmission gaps are functioning as the read/write heads and are not arranged as claimed in Claim 21, i.e. each being displaced along a direction of travel relative to an adjacent read/write head.

With respect to claim 22, the Examiner again improperly relies on inherency. To the extent that Muller et al. inherently includes data channels the specific relationship between the data channels and storage bands is clearly not a proper inherency rejection as the relationship does not necessarily flow from the mere existence of the data channels. As described at length in Appellant's specification (see p. 11, l. 15 – p. 16, l. 17, for example) data channels are used for transferring data between a read/write head assembly and a magnetic tape drive. Increasing the number of data channels per read/write head assembly increases the data transfer rate. There is no inherent number of data channels for every read/write head as apparently alleged by the Examiner. As described in the specification on p. 4, for example, increasing the number of parallel data channels on a recording head places a significant demand on existing head fabrication technologies. For example, increasing the number of data channels per recording head makes the head more cumbersome because of a corresponding increase in the size and stiffness of the "flex" cable containing conductors for carrying read bias and write currents from/to the read/write head. As such, Muller et al. does not inherently disclose a plurality of read/write elements for reading from and writing to a corresponding one of a plurality of data channels associated with each of the plurality of storage bands as disclosed and claimed by Appellant.

For the reasons above, the rejections under 35 USC §102(b) as being anticipated by Muller et al. should be reversed.

D. Rejection of Claims 1 - 3, 6, 7, 10 – 12, 15, 16, 19 and 21 – 23 under 35 U.S.C. § 102(e) as being anticipated by Iwama (US 6,778,359).

While Appellant has not made a determination with respect to whether the Iwama '359 reference is prior art to Appellant's application, and reserves the right to establish a prior date of

invention, Appellant believes that the rejected claims are patentable over Iwama '359 as this reference also fails to disclose a number of features of the rejected claims.

The Examiner again chooses convenient characterizations of various elements contrary to the written description of the reference, conflates various claim terms, and improperly uses inherency to fill in the remaining gaps. For example, the Examiner relies on Figure 5, items 1c and 2c of Iwama as disclosing a plurality of read/write heads each having a plurality of read/write elements 11,12, 13, and 14. Figure 5 is an alternative embodiment to Figure 1 and relies on the description from Figure 1 which identifies magnetic head 1a a magnetic head 2a. Magnetic head 1a includes a single read element 10 and a single write element 20 (Col. 4, ll. 49-54). The structures 11-14 relied upon by the Examiner are described as read gap 11, electromagnetic conversion element 12, magnetic shield 13, and auxiliary pole 14. As such, Iwama does not disclose a plurality of read/write heads each associated with a plurality of read/write elements as disclosed and claimed by Appellant in Claims 1 and 10. Similarly, with respect to Claim 21, each of the read/write heads 1c, 2c are not displaced along a direction of travel of the magnetic storage medium relative to an adjacent read/write head.

In addition, Iwama does not disclose that each read/write head is uniquely associated with a single storage band such that the read/write heads are alignable with a single mode of operation. As described in Appellant's specification, on p. 6, for example, this allows the plurality of read/write heads to be aligned with only one positioning mode, e.g., without coarse position actuation and control. Iwama does not appear to distinguish or recognize storage bands but only discloses tracks (see Fig. 8). As such, Iwama does not disclose that each read/write head is uniquely associated with a corresponding storage band, which contains a plurality of tracks.

The Examiner again improperly relies on a theory of inherency with respect to the claimed relationships between the data channels, read/write heads, and storage bands in rejecting claims 1, 7, 10, and 21. As previously described and incorporated here by reference, to the extent that data channels are inherent to the storage system, there is no inherent arrangement or relationship as disclosed and claimed by Appellant.

With respect to Claim 6, the Examiner's reliance on Figure 6 as anticipating this claim is also misplaced. Claim 6 states that each of the plurality of read/write heads is displaced in a direction of travel of the storage medium relative to an adjacent read/write head. Read/write heads 1c are not displaced along the direction of tape travel. Likewise, read/write heads 2c are not displaced along the direction of tape travel. As such, Fig. 6 of Iwama does not disclose this arrangement of the read/write heads.

For the reasons above, the rejection for anticipation based on Iwama is improper and should be reversed.

E. Rejection of Claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Muller et al. (US 5,831,798).

The Examiner rejected claim 24 as being unpatentable over Muller et al. relying on Official Notice. Appellant disagrees that the claimed arrangement is notoriously well known and requests the Examiner to provide a proper citation to a prior art reference.

As previously described with respect to the anticipation rejection based on Muller et al., In Col. 7, ll. 51-55, Muller et al. states that "For auto-reverse operation, the magnetic heads 25, 28 and 29 can be rotated through 180o about the axis 101 to cooperate with the track pattern of the information on the magnetic tape for the purpose of reading and/or writing in the reverse direction of the tape transport, see Fig. 7a." This directly contradicts the Examiner's assertion that it is so notoriously well known to configure the read/write heads with read/write elements as claimed by Applicant.

The Examiner has not made a *prima facie* case of obviousness in rejection Claim 24. As described above, reliance on Official Notice is misplaced. Muller et al. teaches rotation of the read/write head and not used of read/write elements as claimed by Appellant for performing read/write operations when the tape travels in the opposite direction. The Examiner has not identified a proper motivation or rationale for one of ordinary skill in the art to modify Muller et al. as proposed by the Examiner as Muller teaches away from having read/write elements configured as disclosed and claimed by Appellant.

For at least the reasons above, the rejection of claim 24 under 35 USC §103(a) is improper and should be reversed.

Summary

The prior art relied upon by the Examiner fails to disclose each and every element of Appellant's claims and the rejections for anticipation are therefore improper and should be reversed. Likewise, the Examiner has failed to establish a *prima facie* case of obviousness in rejecting Claim 24 and the rejection should be reversed.

The fee for filing this Appeal Brief and for a 2-month extension of time has been paid upon filing. No additional fee is believed to be due as a result of filing this paper. However, please charge any additional fee or credit any overpayment in connection with this filing to our Deposit Account No. 02-3978.

Respectfully submitted,

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Enclosure – Appendices

VIII. CLAIMS APPENDIX

1. A data storage system, comprising:

a plurality of read/write heads, each read/write head of said plurality of read/write heads having a plurality of read/write elements;

a plurality of data channels, a subset of said plurality of data channels coupled to a read/write head of said plurality of read/write heads; and

a storage medium, said storage medium including a plurality of storage bands, wherein each read/write head is uniquely associated with a single storage band such that the read/write heads are alignable with a single mode of operation, and each read/write element is associated with a corresponding one of said plurality of data channels and operable to read and write data from or to corresponding tracks of a corresponding storage band.

2. The data storage system of claim 1, wherein said data storage system comprises a magnetic tape drive.

3. The data storage system of claim 1, wherein said plurality of read/write heads comprises at least one read/write head having a read/write element configured for read after write operation as the storage medium travels in a first direction and at least one read/write head having a write/read element configured for read after write operation as the storage medium travels in a second direction opposite the first direction.

6. The data storage system of claim 1, wherein each of said plurality of read/write heads is displaced in a direction of travel of the storage medium relative to an adjacent read/write head.

7. The data storage system of claim 1, wherein each of said plurality of read/write heads is coupled to at least two data channels.

10. A read/write head assembly, comprising:

a plurality of read/write heads, each read/write head of said plurality of read/write heads having a plurality of read/write elements each operable to read and write data from or to corresponding tracks of a corresponding storage band of a plurality of storage bands arranged on a storage medium with each read/write head being uniquely associated with a single storage band; and

a plurality of data channels corresponding to the plurality of read/write elements, a subset of said plurality of data channels coupled to a read/write head of said plurality of read/write heads.

11. The read/write head assembly of claim 10, wherein said storage medium comprises a magnetic tape.

12. The read/write head assembly of claim 10, wherein said plurality of read/write heads comprises at least one read/write head having a read/write element configured for read after write operation when the storage medium travels in a first direction and at least one read/write head having a write/read element configured for read after write operation when the storage medium travels in a second direction.

15. The read/write head assembly of claim 10, wherein said subset of said plurality of data channels comprises a read channel and a write channel.

16. The read/write head assembly of claim 10, wherein each of said plurality of read/write heads is coupled to a plurality of data channels associated with one of said plurality of storage bands.

19. The read/write head assembly of claim 10, further comprising:

an actuation unit, said actuation unit operable to align at least one read/write head of said plurality of read/write heads with said corresponding storage band of said plurality of storage bands with a fine positioning operation.

21. A data storage system comprising:

a plurality of read/write heads each associated with a corresponding one of a plurality of storage bands extending across a magnetic storage medium wherein each of the plurality of read/write heads is displaced along a direction of travel of the magnetic storage medium relative to an adjacent read/write head and wherein each of the plurality of read/write heads is coupled to at least one of a plurality of data channels.

22. The data storage system of claim 21 wherein each of the plurality of read/write heads comprises:

a plurality of read/write elements for reading from and writing to, respectively, a corresponding one of a plurality of data channels associated with each of the plurality of storage bands on the magnetic storage medium.

23. The data storage system of claim 21 wherein at least one of the plurality of read/write heads comprises a read/write element configured for read after write operation as the magnetic storage medium travels in a first direction and at least one of the plurality of read/write heads comprises a write/read element configured for read after write operation as the magnetic storage medium travels in a direction opposite the first direction.

24. The data storage system of claim 21 wherein at least one of the plurality of read/write heads comprises a read/write element configured for read after write operation as the magnetic storage medium travels in a first direction and at least one write/read element configured for read after write operation as the magnetic storage medium travels in a direction opposite the first direction.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.